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PCT**NOTIFICATION DE TRANSMISSION DE COPIES DE
LA TRADUCTION DU RAPPORT D'EXAMEN
PRÉLIMINAIRE INTERNATIONAL**

(règle 72.2 du PCT)

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Référence du dossier du déposant ou du mandataire
B 14173.3 GB

NOTIFICATION IMPORTANTE

Demande internationale n°
PCT/FR2003/001965

Date du dépôt international (jour/mois/année)
25 juin 2003 (25.06.2003)

Déposant

COMMISSARIAT A L'ENERGIE ATOMIQUE etc

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PCT/FR2003/

PCT

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Athina Nickitas



PATENT COOPERATION TREATY PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference B 14173.3 GB	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/FR2003/001965	International filing date (day/month/year) 25 juin 2003 (25.06.2003)
International Patent Classification (IPC) or national classification and IPC H01L 27/146, 31/02	Priority date (day/month/year) 25 juin 2002 (25.06.2002)

Applicant

COMMISSARIAT A L'ENERGIE ATOMIQUE

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand

17 janvier 2004 (17.01.2004)

Date of completion of this report

01 October 2004 (01.10.2004)

Name and mailing address of the IPEA/EP

Facsimile No.

Form PCT/IPEA/409 (cover sheet) (July 1998)

Authorized officer

Telephone No.

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/001965

L Basis of the report

1. With regard to the elements of the international application:*

- the international application as originally filed
 the description:

pages _____ 1-36 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

- the claims:

pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19)
 pages _____, filed with the demand
 pages _____ 1-33 _____, filed with the letter of 18 August 2004 (18.08.2004)

- the drawings:

pages _____ 1/8-8/8 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

- the sequence listing part of the description:

pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
 These elements were available or furnished to this Authority in the following language _____ which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 the language of publication of the international application (under Rule 48.3(b)).
 the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority in written form.
 furnished subsequently to this Authority in computer readable form.
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages _____
 the claims, Nos. _____
 the drawings, sheets/fig. _____

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-33</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>3, 6, 7, 9, 12, 14</u>	YES
	Claims	<u>1, 2, 4, 5, 8, 10, 11, 13, 15-33</u>	NO
Industrial applicability (IA)	Claims	<u>1-33</u>	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: US-A-6 018 187 (CAO MIN ET AL) 25 January 2000
 (2000-01-25);

D2: VOZ C ET AL: "Thin-film transistors with polymorphous silicon active layer," JOURNAL OF NON-CRYSTALLINE SOLIDS, NORTH-HOLLAND PHYSICS PUBLISHING, AMSTERDAM, NL, vol. 299-302, April 2002 (2002-04), pages 1345-1350, XP004353229 ISSN: 0022-3093;

D3: POISSANT Y ET AL: "Metastability study and optimization of polymorphous silicon solar cells: the state-of-the-art," JOURNAL OF NON-CRYSTALLINE SOLIDS, NORTH-HOLLAND PHYSICS PUBLISHING, AMSTERDAM, NL, vol. 299-302, April 2002 (2002-04), pages 1173-1178, XP004353196 ISSN: 0022-3093;

D4: AFANAS'EV V P ET AL: "PHOTODETECTOR STRUCTURES BASED ON AMORPHOUS HYDROGENATED SILICON WITH NANOCRYSTALLINE INCLUSIONS" HUETTE. DES INGENIEURS TASCHENBUCH, XX, XX, vol. 68, no. 12, December 2001 (2001-12), pages 949-951, XP008017344;

D5: EP-A-1 050 907 (AGILENT TECHNOLOGIES INC) 8 November
2000 (2000-11-08).

1. The present application does not fulfil the requirements set forth in PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step as defined in PCT Article 33(3).

Document D1, which is considered to be the prior art closest to the subject matter of claim 1, describes a single sensor or an assembly of sensors, in which each sensor outputs a signal corresponding to an image pixel and has

- a detection block with a detection area comprising a photosensitive material;
- a block for addressing and processing signals from the sensor(s), which block has, in particular, an addressing circuit; and
- an interconnection block positioned between the detection block and the addressing block, which block has coupling pads that couple the imager sensors to the addressing circuit (see D1, column 3, line 11 to column 7, line 25; figures 1-8).

It follows that the subject matter of claim 1 differs from the sensor known from D1 in that the photosensitive material of the connection block contains at least one polymorphous silicon film.

The present invention aims to produce a sensor with enhanced time response, low remanence and enhanced ageing stability. These features are achieved by using a polymorphous silicon film as the photosensitive material. However, the

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aforementioned features are always desirable in a sensor and are well known to a person skilled in the art. They are also known from document D1.

Document D4 describes sensors with nanocrystallised, amorphous silicon films (see D4, the whole document).

In D4, the material used is not explicitly called "polymorphous silicon". Nevertheless, the material in D4 has all of the characteristics of the polymorphous silicon described on page 18, lines 20-27, of the description of the present application. Reference 3 in D4 describes polymorphous silicon films and the material used in D4 is considered to be of the same kind as the one used in reference 3 (see D4, the section entitled "Introduction").

As a result, the use of polymorphous silicon films in the field of photosensitive devices is well known to a person skilled in the art and such a person, faced with the problem of producing a sensor with enhanced time response, low remanence and enhanced ageing stability, would do so by using films of material such as the ones described in D4 in a structure as per D1. Such a combination would lead to a sensor like the one described in claim 1. Said sensor is not, therefore, inventive (PCT Article 33(3)).

The subject matter of dependent claims 2, 4, 5, 8, 10, 11, 13 and 15-28 is also known from documents D1, D2 (see, for example, paragraphs 1-3 in D2), D3 (see sections 1-4), D4 (see the whole document) and

D5 (see column 10, line 28 to column 10, line 31; column 3, line 56 to column 6, line 26; figure 2).

Claim 29 does not contain any technical features.

It follows that dependent claims 2, 4, 5, 8, 10, 11 and 15-29 do not contain any features which, in combination with the features of any one of the claims to which they refer, might define subject matter that fulfils the PCT requirements of novelty and inventive step.

The subject matter of dependent claims 3, 6, 7, 9 and 12 is not found in the prior art and appears to be novel (PCT Article 33(2)).

The subject matter of independent claim 30 is a method for producing a sensor or an assembly of sensors as per claim 1. All of the production steps described in claim 30 are known from D1 except for the polymorphous material deposition step, which is known from D4. As with claim 1, a person skilled in the art could combine the deposition of a polymorphous material, as taught in document D4, with the production method of document D1 and thereby arrive at the method of claim 30, without having to exercise any inventive skill. As a result, the subject matter of claim 30 is not inventive (PCT Article 33(3)).

The subject matter of dependent claims 31-33 is also known from documents D1, D2, D3, D4 and D5. As a result, dependent claims 31-33 do not contain any features which, in combination with the features of any one of the claims to which they refer, might

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define subject matter that fulfils the PCT requirements of novelty and inventive step.